REMARKS/ARGUMENTS

Claim rejections – 35 U.S.C. 103(a)

5   Claims 1, 18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al (US 6,480,528) in view of Owen et al (US 20040204098) further in view of Lemson (US5,457,811).

Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al (US 6,480,528) in view of Owen et al (US 20040204098) Lemson (US5,457,811) further

10   in view of Chang (US20040146091).

Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al (US 6,480,528) in view of Owen et al (US 20040204098).

Response

The claimed invention presents a method utilized in a receiver of a

15   **multiple–antenna system**, and the method is of automatic gain control for multiple OFDM modules receiving data on a single frequency band. The method includes measuring RMS powers of a first group of symbols received at the receiver antennas, determining candidate powers in various ways, such as RMS calculation, arithmetic mean, or geometric mean, and once all candidate powers being determined, selecting one of the

20   candidate powers according to a predetermined rule and setting the gain of the receiver amplifiers.

To the contrary, Patel discloses a receiver of a **single-antenna system**. The receiver receives **multi-carrier signals on a single antenna** and filters the received signal into

25   sub-carriers. Each of the sub-carriers is sent to a corresponding matched filter unit for matched filtering. A variable gain amplifier (VGA) in each of the matched filter unit provides a gain of the filtered signal and is controlled by an AGC (Automatic Gain

Control) circuit. In other words, Patel teaches a plurality of processing paths each for one sub-carrier among multiple sub-carriers derived from **a received signal of a single antenna**.

5   Further, Owen discloses an adaptive antenna array and a method to control the operation thereof. The adaptive antenna arrangement of Owen for generating a downlink beam comprises a plurality of antenna elements; and a controller for controlling formation of the downlink beam, the controller characterised in that the controller is arranged to adjust, with time, a number of antenna elements active in the formation of the downlink

10   beam thereby to vary, in use, a beam width of the downlink beam.

In asserting his 103 rejection against claim 1, the examiner alleged that Patel teaches all of the claim elements in claim 1 but one limitation of the antenna system comprising a plurality of antennas and setting the gain of the amplifier according to a selected

15   candidate power with the processor (see fig. 2 and accompanying detailed description). In an attempt to compensate for such deficiency, the examiner then asserted that Owen teaches the antenna system comprising a plurality of antennas (see fig. 2, numbers 12a, 12b, 12k, paragraph 0032) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Owen into the system of

20   Patel in order to support multiple subscriber units (as suggested by Owen see paragraph 0031), but still the combination of Patel and Owen fails to teach setting the gain of the amplifier according to a selected candidate power with the processor. To that effect, the examiner further alleged that Lemson teaches setting the gain of the amplifier according to a selected candidate power with the processor (see fig. 6, number 56, col. 29, lines

25   14-20, 36-42) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Lemson into the system of Patel and Owen in order to calculate the correct attenuation or gain to be set for the first and second level signal changing devices (as suggested by Lemson col. 29, lines 36-42). **The**

applicant respectfully disagrees because the combination of Patel and Owen as asserted by the examiner is not suggested or motivated either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, and there is no reasonable expectation of success of so combining, as otherwise
5   **required by the *prima facie* standard of 103 obviousness.**

Patel teaches that "Fig. 1 shows a plot of a multi-carrier (MC) signal that includes three modulated signals centered at the frequencies of f_1, f_2, and f_3 and occupying predetermined bandwidths of BW_1, BW_2, and BW_3, respectively. The three modulated

10   signals occupy a total bandwidth of BW_{RX}. Each modulated signal is generated with its own carrier signal, and the modulated signal is thus also referred to as a "sub-carrier" of the multi-carrier signal." [fig. 1, col. 4, lines 34-41] Patel also teaches that "Fig. 2 shows a simplified block diagram of an embodiment of a receiver 200 for processing the multi-carrier signal shown in Fig. 1. The transmitted signal is received by an antenna

15   212 .... " and "Filters 222 provides matched filtering for one modulated signal, and has a bandwidth matched to the bandwidth of the particular signal on which it operates," [fig. 2, col. 4, lines 56-67, and col. 5, lines 1-8] As exemplified by the above-cited languages of Patel, throughout its disclosure Patel actually teaches no more than a receiver system only capable of **processing a plurality of various sub-carriers of a signal received through**

20   **a single antenna.** Indeed, Patel's receiver includes in each of its plurality of sub-carrier processing branch a structure where "VGA 224 provides adjustable gain of the filtered signal and is controlled by a gain control signal from an AGC circuit 240."[fig. 2, col. 5, lines 1-3] and other components, but this still will not change the fact that such a teaching directs solely toward the operation of processing sub-carriers of a single antenna signal.

25

Knowing the nature of the teaching of Patel, it is then the applicant's position that there is no suggestion or motivation whatsoever either in the cited references themselves or within the knowledge of a skilled artisan in the relevant art to combine Owen's

8

multi-antenna system **with a plurality of branches for processing signals received from respective antennas** with Patel's single antenna system **with a plurality of branches for processing sub-carriers received from the single antenna**, and therefore one can hardly reasonably expect a successful derivation of the present inventive system

5   as required by claim 1. It is simply a far-reached attempt, under well-established law of determining obviousness, to combine the two references by grossly ignoring the clear difference between Patel's multiple processing branch each for **signal from one of many antennas** and Owen's, similarly multiple processing branch, but each for **sub-carrier from only one antenna**, and actually constitutes an impermissible hindsight combination

10   only accessible when inspired by the disclosure of the present invention.

The applicant further asserts that the only feasible combination of the teaching of Patel and Owen, which can be readily observed in view of the disclosure of the two, is to adapt the single antenna system of Patel into each processing branches following each of

15   the plurality of antennas of Owen. By doing so, the resulting combination will include a multiple antenna system with each of the antenna followed by a multi-sub-carrier processing structure as shown in fig. 2 of Patel. However, such a combined structure still fails to teach each and every claim element of claim 1, again a requirement for establishing *prima facie* case of obviousness.

20

Upon the arguments mentioned above, the applicant believes that the disclosure of Patel combining Owen does not support the rejection under 35 U.S.C. 103 (a) because "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the

25   knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed

combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - §2143.03 for decisions pertinent to each of these criteria." [MPEP **2142 Legal Concept of** *Prima Facie* **Obviousness**] More specifically, since

5   it is not reasonable to provide the teaching of Owen into the teaching of Patel, there is neither any suggestion nor any motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings as suggested by the examiner. The applicant believes that claim 1 is placed in a position for allowance, and claim 20 is placed in a position for

10   allowance for the same reason.

Claims 18 and 19

As claims 18 and 19 are dependent on claims 1 respectively and should be allowed if

15   claims 1 is found allowable, applicants believe claims 18 and 19 have been placed in position for allowance.

Claims 2-17

As claims 2-17 are dependent on claims 1 respectively and should be allowed if claims 1 is found allowable, applicants believe claims 2-17 have been placed in position

20   for allowance.

Claims 21

As claims 21 is dependent on claims 20 respectively and should be allowed if claims 20 is found allowable, applicants believe claims 21 has been placed in position for allowance.

25   Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Sincerely yours,

Winston Hsu   Date: _____11/27/2006_____

Winston Hsu, Patent Agent No. 41,526

5   P.O. BOX 506, Merrifield, VA 22116, U.S.A.

Voice Mail: 302-729-1562

Facsimile: 806-498-6673

e-mail : winstonhsu@naipo.com

10   Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 13 hours behind the Taiwan time, i.e. 9 AM in D.C. = 10 PM in Taiwan.)